

# LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

## Volume 5 | Technical Appendices

CFA11 | Stoke Mandeville and Aylesbury  
**Operational assessment (SV-004-011)**  
Sound, noise and vibration

November 2013

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Department  
for Transport

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High Speed Two (HS2) Limited,  
Eland House,  
Bressenden Place,  
London SW1E 5DU

Details of how to obtain further copies are available from HS2 Ltd.

Telephone: 020 7944 4908

General email enquiries: [HS2enquiries@hs2.org.uk](mailto:HS2enquiries@hs2.org.uk)

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## Appendix SV-004-011

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Operation assessment	004
Community forum area:	Stoke Mandeville & Aylesbury	011

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# 1 Introduction

## 1.1 Structure of the sound, noise and vibration appendices

- 1.1.1 The sound, noise and vibration appendices comprise four sections. The first of these details the methodology used (Appendix SV-001-000) and relates to the sound, noise and vibration assessment for all community forum areas (CFA).
- 1.1.2 For the Stoke Mandeville & Aylesbury community forum area (CFA11), the other three sections are as follows:
- baseline sound, noise and vibration (Appendix SV-002-011);
  - construction sound, noise and vibration (Appendix SV-003-011); and
  - operational sound, noise and vibration (Appendix SV-004-011) (this appendix).
- 1.1.3 The outcomes of this assessment are summarised in Volume 2: CFA11 Report, Chapter 11 Sound, Noise and Vibration.
- 1.1.4 Maps referred to throughout the sound, noise and vibration appendices are contained in the Volume 5 sound, noise and vibration map book.
- 1.1.5 This appendix presents the likely noise and vibration impacts, effects and significant effects arising from the operation of the Proposed Scheme for the Stoke Mandeville & Aylesbury area on:
- people, primarily where they live ('residential receptors') in terms a) individual dwellings and b) on a wider community basis, including any shared community spaces; and
  - community facilities such as schools, hospitals, places of worship, and also commercial properties such as offices and hotels, collectively described as 'non-residential receptors' and 'quiet areas'.
- 1.1.6 The assessment of likely impacts, effects and significant effects from operational noise and vibration on agricultural, community, ecological or heritage receptors and the assessment of tranquillity are presented in the following documents within Volume 5:
- Agriculture, forestry and soils      Appendix AG-001-011
  - Community                                  Appendix CM-001-011
  - Ecology                                        Appendix EC-005-002
  - Heritage                                        Appendix CH-003-011
  - Landscape and Visual                  Appendix LV-001-011

## 1.2 Evaluation of impacts and effects

- 1.2.1 This appendix provides a quantitative assessment of operational noise and vibration impacts and effects and a qualitative assessment of likely significant effects, based on the impacts and effects identified and other local context information consistent with the scope and methodology defined for the Proposed Scheme.
- 1.2.2 Indirect effects arising from permanent changes in traffic patterns on the existing road and rail networks as a consequence of the Proposed Scheme are also reported in this appendix, where they would occur within the study area as defined in Volume 5: Appendix SV-001-000.
- 1.2.3 Route-wide impacts, effects and significant effects associated with noise or vibration from the operation of the Proposed Scheme are reported in Volume 3.
- 1.2.4 Off-route effects of noise or vibration arising from the operation of the Proposed Scheme, including those likely to arise from permanent changes in traffic patterns on roads or railways outside of the study area for direct effects are reported in Volume 4.
- 1.2.5 In undertaking the assessment of sound, noise and vibration, consistent with EIA Regulations and emerging National Planning Practice Guidance<sup>1</sup> a differentiation between impacts effects, adverse effects and significant effects is made. Further information is provided in Volume 5: Appendix SV001-000.
- 1.2.6 The assessment of impacts has been undertaken at assessment locations that are representative of a number of dwellings or other sensitive receptors. The Assessment Locations employed in this assessment are presented on map series Sv-02 in the CFA11 Volume 5 sound, noise and vibration map book.

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<sup>1</sup> National Planning Practice Guidance – Noise <http://planningguidance.planningportal.gov.uk> ; refer to the table summarising noise exposure hierarchy

## 2 Scope, assumptions and limitations

### 2.1 Regional and local policy guidance

2.1.1 The policy framework for sound, noise and vibration is set out in Volume 1 and in Appendix SV-001-000. As part of the engagement with local authorities through the Planning Forum Sub Group (Acoustics), information regarding any specific local planning guidance in respect of noise and vibration has been requested. Whilst no information has been received for this study area via the Planning Forum Sub Group (Acoustics) the following local policy guidance on noise and vibration has been identified:

- Aylesbury Vale District Local Plan - Jan 2004; and
- Wycombe Local Plan - Jan 2004.

2.1.2 This guidance has been considered as part of formulating the detailed application of the impact and significance criteria set out in Volume 5: Appendix SV-001-000.

### 2.2 Engagement

2.2.1 Details of engagement on a route-wide basis with the local and county authorities' Environmental Health Practitioners via the Planning Forum Sub Group - Acoustics, is set out in Volume 1, Section 8.

2.2.2 Engagement with communities has been via the Community Forums, as set out in Volume 1. In respect of sound, noise and vibration the following discussions have taken place:

- general discussions in respect of local issues, including possible ways to avoid and mitigate the potential impacts of noise or vibration
- September / October 2012; a specific presentation about sound, noise and vibration with discussion afterwards with one of the project team specialists;
- November / December 2012; specific request for the Community Forum to propose baseline sound monitoring locations;
- January / February 2013; feedback to the Community Forum on any proposed baseline monitoring locations; and
- verbal / written response to questions on sound, noise and vibration.

### 2.3 Methodology

2.3.1 The methodology used for the assessment of airborne sound, ground-borne sound and vibration impacts and the determination of significant effects is defined in the Scope and Methodology Report (SMR) (Volume 5: Appendix CT-001-000/1), is clarified in a number of areas by the SMR addendum (Volume 5: Appendix CT-001-000/2). Further information is contained in Volume 5: Appendix SV-001-000.



## 2.4 Assumptions

- 2.4.1 Route-wide assumptions are outlined in Volume 1 and are further detailed in Appendix SV-001-000. Local assumptions that apply to the assessment of operational sound noise and vibration within this CFA are set out in Volume 2: Report 11 and below.

### *Maintenance Loops*

- 2.4.2 As part of the Proposed Scheme, there will be the provision of two sets of maintenance loops. These will be constructed near Stoke Mandeville. These maintenance loops will consist of an additional section of track each side of the operational railway which will be provided to ensure the operational efficiency of the railway. The maintenance depot is shown on map series SV-02 in the CFA11 Volume 5 sound, noise and vibration map book.
- 2.4.3 These maintenance loops are primarily provided for the daytime storage of track machines that cannot return to Calvert IMD for operational reasons, but could also be used for the temporary storage of HS2 trains that are required to be removed from operational service.
- 2.4.4 The use of these maintenance loops will be infrequent and the activities most likely to be carried out on these loops will be occasional cleaning and preparation of track machines during the day. It is not expected that these maintenance loops will be in regular operational use and the majority of the servicing of track machines will be carried out at Calvert IMD which is located in study area CFA 13, where more appropriate facilities are located. Due to their infrequent use, it is not expected that the maintenance loops will lead to any significant operational noise impacts.

## 2.5 Local limitations

- 2.5.1 In this area, there are a number of locations where the land or property owners did not permit baseline sound level monitoring to be undertaken at their premises. However, sufficient information has been obtained to undertake the assessment. Further information is provided in Volume 5: Appendix SV-002-011.

## 3 Environmental baseline

### 3.1 Existing baseline

3.1.1 Baseline sound level data has been collected at locations representative of the airborne sound-sensitive receptors. The existing and future baseline airborne sound levels derived from these measurements are included within Table 3. Details of the baseline data collection and the methodology are given in Volume 5: Appendix SV-001-000 and specifically for this study area in Volume 5: Appendix SV-002-011.

3.1.2 The majority of receptors adjacent to the line of the route are not currently subject to appreciable vibration and therefore vibration at all receptors has been assessed using the absolute vibration criteria as described in Volume 5: Appendix SV-001-000.

### 3.2 Future baseline

3.2.1 The assessment is based upon the predicted change in sound levels that result from the Proposed Scheme. The assessment initially considered a reasonable worst case (that would overestimate the change in levels) by assuming that sound levels would not change from the existing baseline year of 2012/2013. Where significant effects were identified on this basis, the effects have been assessed using the baseline year of 2026 to coincide with the proposed start of passenger services. The future baseline is for the sound environment that would exist in 2026 without the Proposed Scheme.

## 4 Effects arising during operation

### 4.1 Introduction

4.1.1 The assessment is reported first for ground-borne sound and vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts and effects are presented. This is followed by the identification of significant effects and the evidence used to support these conclusions.

4.1.2 The structure of this assessment report is:

- Avoidance and mitigation measures
- Quantitative identification of impact and effects
  - Ground-borne sound and vibration
    - Residential
    - Non-residential
  - Airborne sound
    - Residential
    - Non-residential
- Assessment of impacts and effects
  - Residential receptors: direct effects – dwellings
  - Residential receptors: direct effects – communities
  - Residential receptors: indirect effects
  - Non-residential receptors: direct effects
  - Non-residential receptors: indirect effects
  - Cumulative effects from the proposed scheme and other committed development.

### 4.2 Avoidance and mitigation measures

4.2.1 These are set out in Volume 2: Report 11.

### 4.3 Quantitative identification of impacts and effects

#### Ground-borne sound and vibration

4.3.1 Assessment locations defined for the quantitative assessment of impacts are shown on map series SV-02 in the CFA11 Volume 5 sound, noise and vibration map book.

4.3.2 For each Assessment Location, the assessment results for residential and non-residential receptors are presented in Table 1. Explanation of the information in Table 1 is provided in Appendix SV-001-000, with the following additional notes.






B	For non-residential receptors further detail about the type of effect is set out in the text of Volume 5: Appendix SV-001-000.
NA	Type of effect - Generally no adverse effect
A	Type of effect - Adverse effect
S	Type of effect - Significant adverse effect
VDV	Vibration Dose Value
~	The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).
^	The impact methodology has identified a potential significant effect at this receptor which based upon further qualitative information is not considered to be a likely significant effect. Please refer the end of this Appendix for further information.
	Where the significant effect column is highlighted in pink, then a significant effect is identified at the referenced residential community area, or individual receptor.
	Yellow denotes a low ground-borne noise impact or a minor ground-borne vibration impact
	Orange denotes a medium ground-borne noise impact or a moderate ground-borne vibration impact
	Red denotes a high ground-borne noise impact or a major ground-borne vibration impact
	Dark red denotes a very high ground-borne noise impact

Table 1: Ground-borne sound and vibration levels, noise and vibration impacts and effects

Assessment location		Impact criteria				Significance criteria								Significant effect
		Ground-borne sound level dB L <sub>pASmax</sub>	VDV m/s <sup>1.75</sup> Daytime (07:00 - 23:00)	VDV m/s <sup>1.75</sup> Night time (23:00 – 07:00)	% increase or decrease in VDV	Number of impacts represented	Type of effect	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation effect	
ID	Area represented													
320799	Oxford Road, Hartwell	-	0.16	0.08	-	1	NA	R	T	-	-	-	-	

## Impact summary

- 4.3.3 The operational groundborne sound and vibration impacts identified in Table 1 are summarised in Table 2.

Table 2: Ground-borne sound and vibration impacts and effects at residential and non-residential receptors

	Number of ground-borne sound impacts			
	Low	Medium	High	Very High
Residential properties	0	0	0	0
Non-residential properties	0			0
	Number of ground-borne vibration impacts			
	Minor	Moderate	Major	Risk of building damage
Residential properties	0	0	0	0
Non-residential properties	0			0

## Airborne sound: direct impacts and effects

- 4.3.4 The direct effects from the operation of the Proposed Scheme as well as any new, amended or altered roads or railway lines, which are identified as part of the scheme, are presented in Table 3.
- 4.3.5 The assessment information, impact criteria and significance criteria for the assessment of the incorporated mitigation case at residential and non-residential receptors are presented in Table 3. The results should be considered in conjunction with the information contained in map series Sv-02 in the CFA11 Volume 5 sound, noise and vibration map book.
- 4.3.6 Explanation of the Table 3 information is provided in Volume 5: Appendix SV001-000, with the following additional notes.



Where the significant effect column is marked, then a significant effect is identified at the referenced group of dwellings, or individual residential or non-residential receptor.

Yellow denotes a minor impact at a residential building – a change is of 3-5 dB

Orange denotes a moderate impact at a residential building – a change is of 5-10 dB

Red denotes a major impact at a residential building – a change is of >10 dB

\* Day -  $L_{pAeq,07:00-23:00}$

\*\* Night -  $L_{pAeq,23:00-07:00}$

\*\*\* Max -  $L_{pAFmax}$  In the Proposed Scheme only column, two values are presented. The first is the value for the HS2 mitigated train and the second is the value for the TSI compliant train. For further information refer to Volume 5: Appendix SV-001-000.

\*\*\*\* Where the Proposed Scheme modifies an existing source, i.e. road or railway realignments, the *Proposed Scheme only* level in the table includes the sound from the modified source. In this situation the *Do something (Opening year baseline + Year 15 traffic)* level has been corrected so as to not double count the sound associated with the road or railway on its new and existing alignment.

A Adverse effect

B For non-residential receptors further detail about the type of effect is set out in the text of Appendix SV-001-000.

CD	Committed Development. The value in brackets in the number of impacts represented column is the value with the committed development.
G	(G1) Theatres, large auditoria and concert halls, (G2) Sound recording and broadcast studios, (G3) Places of meeting for religious worship, courts, cinemas, lecture theatres, museums and small auditoria or halls, (G4) Schools, colleges, hospitals, hotels and libraries, and (G5) Offices and general commercial premises
H	High existing ambient sound level. Defined as $>65\text{dB}_{\text{Aeq, day}}$ and/or $>55\text{dB}_{\text{Aeq, night}}$
L	Low existing ambient sound level. Defined as $<42\text{dB}_{\text{Aeq, day}}$ and/or $<32\text{dB}_{\text{Aeq, night}}$
LD	Landscape receptor
NA	Generally no adverse effect
NI	The receptor is predicted to qualify for mitigation, which shall be provided to the specification defined in the Noise Insulation (Railways and other Guided Rail Systems) Regulations 1996
R	Residential
RM	Residential mooring
S	Significant adverse effect
U	Unacceptable adverse effect
#	A change of 3dB or greater has been identified however, the assessment methodology only defines an impact where the absolute sound level from the Proposed Scheme is greater or equal to 50 dB $L_{\text{pAeq, 23:00} - 07:00}$ during the daytime or 40 dB $L_{\text{pAeq, 07:00} - 23:00}$ at night. At the receptor denoted the absolute level condition is not met and therefore no impact is identified.
~	The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).
\$	A change of 3dB or greater has been identified however, the impact methodology for non-residential receptors includes a screening criteria for G3 building use of 50 dB $L_{\text{pAeq, 07:00} - 23:00}$ , for G4 building use 55 dB $L_{\text{pAeq, 07:00} - 23:00}$ and 45 dB $L_{\text{pAeq, 23:00} - 07:00}$ , for G5 building use 55 dB $L_{\text{pAeq, 07:00} - 23:00}$ . At the receptor denoted the screening criteria is not met and therefore no impact is identified. Further information is provided in Volume 5: Appendix SV-001-000.
^	The impact methodology has either identified an impact at a receptor which based upon further qualitative information does not give rise to a significant effect. Further information is provided at the end of this Appendix.

Table 3: Operational airborne sound level, noise impacts and effects

Assessment Location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
298707	Cooks Road, Aylesbury	47	38	59/63	51	41	46	52	42	1	1	NA	78	R	T	-	-	-	-	
298735	Hickman Street, Aylesbury	43	35	55/59	47	42	48	48	42	1	1	NA	85	R	T	-	-	-	-	
298817	Cooks Road, Aylesbury	47	38	58/62	46	36	43	49	39	3	3	NA	78	R	T	-	-	-	-	#
298976	Eyre Close, Aylesbury	47	39	58/63	51	41	46	52	42	1	1	NA	59	R	T	-	-	-	-	
299219	Brimmers Way, Aylesbury	41	32	53/56	49	46	50	50	46	1	0	NA	121	R	T	-	-	-	-	
299591	Brimmers Way, Aylesbury	42	32	54/57	49	46	50	50	46	1	0	NA	75	R	T	-	-	-	-	
299978	Great Meadow Way, Aylesbury	43	34	54/57	47	42	48	49	42	1	1	NA	65	R	T	-	-	-	-	
300635	Napier Road, Aylesbury	47	38	59/62	46	35	37	50	40	4	5	NA	61	R	T	-	-	-	-	#
300647	Warbler Close, Aylesbury	47	38	57/61	44	39	45	48	41	5	2	NA	69	R	T	-	-	-	-	#
300773	Wren Path, Aylesbury	42	33	54/57	49	46	50	50	46	1	0	NA	32	R	T	-	-	-	-	
300929	Spruce Road, Aylesbury	44	35	56/59	49	46	50	50	46	1	0	NA	43	R	T	-	-	-	-	
301228	Grosvenor Way, Aylesbury	48	39	62/65	48	38	39	51	41	3	4	NA	68	R	T	-	-	-	-	#
301296	Arncott Way, Aylesbury	44	35	55/58	49	46	50	50	46	1	0	NA	36	R	T	-	-	-	-	
301483	Chelsea Road, Aylesbury	46	37	61/64	49	46	50	51	47	2	1	NA	14	R	T	-	-	-	-	
301668	Chelsea Road, Aylesbury	45	36	60/63	49	46	50	51	46	1	0	NA	21	R	T	-	-	-	-	
301851	Hampstead Close, Aylesbury	45	35	58/61	49	46	50	50	46	1	0	NA	35	R	T	-	-	-	-	
302545	Upper Winchendon, Aylesbury	44	35	55/58	47	43	48	49	44	2	1	NA	1	R	T	-	-	-	-	
303147	Cottage Grounds, Stone	40	31	52/55	53	45	54	53	45	0	0	NA	25	R	T	-	-	-	-	
304833	Sedrup, Hartwell	49	40	65/68	47	40	51	51	43	4	3	A	4	R	T	-	-	-	-	OSV11-Co5
304876	Portway Road, Stone	42	33	54/57	58	49	69	58	49	0	0	NA	3	R	T	-	-	-	-	



Assessment Location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
304968	Sedrup, Hartwell	46	38	56/59	49	43	51	50	43	1	1	NA	1	R	T	-	-	-	-	
305037	Portway Road, Stone	43	35	58/61	49	43	51	50	43	1	1	NA	1	R	T	-	-	-	-	
305139	Meadoway, Hartwell	50	42	57/60	54	45	69	54	45	0	0	A	24	R	T	-	-	-	-	
305201	Mayflower Close, Hartwell	59	50	60/63	60	51	69	59	50	-1	-1	A	15	R	T	-	-	-	-	
305474	Upper Hartwell, Stone	42	34	53/56	46	37	43	47	38	1	1	NA	45	R	T	-	-	-	-	
305678	Upper Hartwell, Stone	43	35	55/58	46	37	43	47	38	2	1	NA	6	R	T	-	-	-	-	
305692	Upper Hartwell, Stone	44	35	55/58	46	37	43	47	38	2	1	NA	19	R	T	-	-	-	-	
305767	Lower Hartwell, Aylesbury	50	41	61/64	44	38	46	50	41	5	4	A	8	R	T	-	-	-	-	^
305827	Lower Hartwell, Aylesbury	46	38	56/60	53	45	54	53	45	1	0	NA	1	R	T	-	-	-	-	
305896	Oxford Road, Stone	48	41	55/59	70	62	69	70	62	0	0	A	2	R	T	H	-	-	-	
305909	Lower Hartwell, Aylesbury	48	41	55/60	61	52	69	61	52	0	0	A	1	R	T	-	-	-	-	
306075	Oxford Road, Hartwell	61	53	67/71	71	63	69	67	58	-4	-5	A	1	R	T	H	-	-	-	
306197	Swallow Lane, Aylesbury	43	34	54/57	47	42	48	48	42	1	1	NA	24	R	T	-	-	-	-	
306223	Lower Hartwell, Aylesbury	51	42	63/66	46	36	43	52	43	6	6	A	1	R	T	-	-	-	-	~
307325	Meredith Drive, Aylesbury	41	31	54/57	49	46	50	50	46	1	0	NA	48	R	T	-	-	-	-	
308644	Gogh Road, Aylesbury	43	34	57/60	49	46	50	50	46	1	0	NA	40	R	T	-	-	-	-	
308665	Picasso Place, Aylesbury	43	33	57/60	49	46	50	50	46	1	0	NA	40	R	T	-	-	-	-	
309021	Telford Close, Aylesbury	39	30	51/54	49	46	50	50	46	0	0	NA	1	R	T	-	-	-	-	
309118	Tompion Road, Aylesbury	44	35	58/61	47	42	48	49	43	2	1	NA	1	R	T	-	-	-	-	
309296	Rabans Lane, Aylesbury	52	43	66/69	47	36	41	53	43	6	8	A	4	R	T	-	-	-	-	~
309474	Rabans Lane, Aylesbury	49	39	64/67	50	46	51	52	47	3	1	NA	2	R	T	-	-	-	-	#

Assessment Location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
310199	Oxpen, Aylesbury	41	32	56/59	65	59	70	65	59	0	0	NA	20	R	T	H	-	-	-	
310538	Fleet Marston, Aylesbury	51	42	61/64	46	39	45	52	42	5	4	A	1	R	T	-	-	-	-	~
310564	Fleet Marston, Aylesbury	50	41	60/63	46	39	45	51	42	5	4	A	1	R	T	-	-	-	-	~
310612	Fleet Marston, Aylesbury	46	36	57/60	47	43	48	50	44	2	1	NA	2	R	T	-	-	-	-	
310839	Fleet Marston, Aylesbury	50	41	62/65	65	59	70	66	59	0	0	A	2	R	T	H	-	-	-	
310891	Hunters Farm Industrial Estate, Fleet Marston	50	41	67/70	65	59	70	66	59	0	0	A	1	R	T	H	-	-	-	
310944	Fleet Marston, Aylesbury	54	46	72/75	65	59	70	66	59	0	0	A	3	R	T	H	-	-	-	
311007	Putlowes Drive, Fleet Marston	61	51	78/81	48	41	50	61	52	13	11	S	1	R	T	-	-	-	NI	OSV11-Do4
311114	Fleet Marston, Aylesbury	49	40	61/64	55	47	55	56	47	1	1	A	2	R	T	-	-	-	-	
311158	Putlowes Drive, Fleet Marston	48	39	62/65	55	47	55	56	47	1	1	NA	6	R	T	-	-	-	-	
311184	Quarrendon, Aylesbury	42	32	53/56	48	41	50	49	42	1	1	NA	3	R	T	-	-	-	-	
311929	Oxpen, Aylesbury	44	35	58/61	65	59	70	65	59	0	0	NA	24	R	T	H	-	-	-	
312462	Risborough Road, Stoke Mandeville	59	50	75/78	58	49	76	59	50	1	0	A	2	R	T	-	-	-	-	
312566	Bishopstone, Aylesbury	50	42	61/64	54	53	51	55	53	1	0	A	2	R	T	-	-	-	-	
312872	Bishopstone, Aylesbury	44	36	51/54	54	53	51	54	53	0	0	NA	2	R	T	-	-	-	-	
313421	Risborough Road, Stoke Mandeville	56	47	70/73	54	45	53	58	49	4	4	A	2	R	T	-	-	-	-	OSV11-Co1
313673	Risborough Road, Stoke Mandeville	66	56	72/76	54	45	53	66	56	12	11	S	1	R	T	-	-	-	NI	OSV11-Co1 OSV11-Do2
313799	Risborough Road, Stoke Mandeville	60	51	71/74	50	44	51	60	51	10	7	A	1	R	T	-	-	-	-	OSV11-Co1

Assessment Location		Impact criteria										Significance criteria								Significant effect
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		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
313866	Risborough Road, Stoke Mandeville	60	51	77/80	64	55	76	60	51	-4	-4	A	2	R	T	H	-	-	NI	
314965	Old Risborough Road, Stoke Mandeville	59	50	69/72	52	50	58	60	52	7	3	A	7	R	T	-	-	-	-	OSV11-C01
316101	Hampden Square, Aylesbury	41	33	52/55	47	42	48	48	42	1	0	NA	189	R	T	-	-	-	-	
317201	Church Court, Stoke Mandeville	49	41	61/64	50	44	50	50	44	0	0	A	24	R	T	-	-	-	-	
319163	Sedrup, Hartwell	51	42	66/69	46	39	51	52	44	6	4	A	5	R	T	-	-	-	-	OSV11-C05
319187	Sedrup, Hartwell	52	44	69/72	47	40	51	53	45	6	5	A	1	R	T	-	-	-	-	OSV11-C05
319293	Pearson Close, Aylesbury	49	42	55/60	57	48	59	56	46	-1	-2	A	35	R	T	-	-	-	-	
319325	Alham Road, Aylesbury	43	35	51/54	47	41	47	48	42	1	1	NA	93	R	T	-	-	-	-	
319422	Dormer Close, Aylesbury	49	44	55/59	49	44	52	49	44	1	0	A	118	R	T	-	-	-	-	
319615	Bonham Close, Aylesbury	49	44	54/58	49	44	52	49	44	1	0	A	178	R	T	-	-	-	-	
320227	Briskman Way, Aylesbury	40	31	52/56	57	48	59	57	48	0	0	NA	28	R	T	-	-	-	-	
320409	Oxford Road, Hartwell	55	46	66/71	59	50	69	55	46	-4	-4	A	1	R	T	-	-	-	-	
320715	Lupin Walk, Aylesbury	50	42	54/58	49	44	52	50	45	2	1	A	127	R	T	-	-	-	-	
320799	Oxford Road, Hartwell	61	52	74/77	52	43	69	61	52	10	9	A	1	R	T	-	-	-	-	~
320819	Oxford Road, Hartwell	60	51	68/72	56	48	69	60	51	4	3	A	1	R	T	-	-	-	-	~
324002	Slattenham Close, Aylesbury	39	31	50/53	47	41	47	47	41	1	0	NA	208	R	T	-	-	-	-	
324129	Rowland Way, Aylesbury	42	34	52/55	47	41	47	47	41	1	0	NA	112	R	T	-	-	-	-	
325151	Upper Abbots Hill, Aylesbury	50	42	56/61	57	48	59	57	47	0	-1	A	118	R	T	-	-	-	-	
325211	Great Meadow Way, Aylesbury	44	35	55/60	57	48	59	57	48	0	0	NA	72	R	T	-	-	-	-	

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		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
325431	Horton Close, Aylesbury	44	36	55/60	57	48	59	57	48	0	0	NA	130	R	T	-	-	-	-	
325816	Pitcher Walk, Aylesbury	42	34	52/55	47	42	48	48	42	1	0	NA	347	R	T	-	-	-	-	
327420	Bishopstone, Aylesbury	47	39	60/63	49	43	51	51	44	2	1	NA	2	R	T	-	-	-	-	
327675	Torridge Road, Aylesbury	42	33	51/54	47	41	47	48	41	1	1	NA	176	R	T	-	-	-	-	
328417	Ellen Road, Aylesbury	41	32	50/53	45	41	43	46	41	1	0	NA	1	R	T	-	-	-	-	
328584	Brent Path, Aylesbury	44	35	54/58	45	41	43	47	41	2	1	NA	41	R	T	-	-	-	-	
328805	Lowmon Way, Aylesbury	45	36	55/59	45	41	43	48	42	3	1	NA	53	R	T	-	-	-	-	
329008	Orwell Close, Aylesbury	42	33	52/55	45	41	43	47	41	2	1	NA	84	R	T	-	-	-	-	
329139	Enborne Close, Aylesbury	44	35	53/57	45	41	43	47	42	2	1	NA	64	R	T	-	-	-	-	
329253	Welland Road, Aylesbury	46	37	56/60	45	46	49	48	46	3	0	NA	30	R	T	-	-	-	-	#
329413	Blackwater Drive, Aylesbury	45	36	55/58	47	41	47	49	42	2	1	NA	61	R	T	-	-	-	-	
329685	Witham Way, Aylesbury	48	39	57/62	45	41	43	49	43	4	2	NA	57	R	T	-	-	-	-	#
329807	Witham Way, Aylesbury	46	37	57/61	45	41	43	49	42	4	2	NA	44	R	T	-	-	-	-	#
330063	Alwin Close, Aylesbury	43	34	53/56	47	41	47	48	42	1	1	NA	84	R	T	-	-	-	-	
330343	Ebble Close, Aylesbury	46	37	56/60	45	41	43	48	42	3	1	NA	78	R	T	-	-	-	-	#
330464	Anton Way, Aylesbury	47	38	57/62	45	41	43	49	42	4	2	NA	13	R	T	-	-	-	-	#
330552	Stour Close, Aylesbury	49	39	59/64	45	41	43	50	43	5	3	A	49	R	T	-	-	-	-	#
330593	Parslow Close, Aylesbury	49	41	58/61	45	42	46	50	44	5	2	A	78	R	T	-	-	-	-	#
330723	Anton Way, Aylesbury	48	39	58/62	48	39	48	51	42	3	3	NA	56	R	T	-	-	-	-	#
330937	Garron Close, Aylesbury	45	36	55/58	48	39	48	50	41	2	2	NA	71	R	T	-	-	-	-	
331111	Isis Close, Aylesbury	50	41	61/65	45	39	43	51	43	6	4	A	27	R	T	-	-	-	-	OSV11-Co4

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		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
331451	Bowmont Drive, Aylesbury	45	37	56/60	45	41	43	48	42	3	1	NA	63	R	T	-	-	-	-	#
331680	Anton Way, Aylesbury	48	39	59/63	45	39	43	50	42	5	3	NA	103	R	T	-	-	-	-	#
331963	Hillier Road, Aylesbury	46	37	55/59	45	42	46	48	43	3	1	NA	99	R	T	-	-	-	-	#
332206	Anton Way, Aylesbury	49	40	59/63	48	39	48	52	43	3	4	A	33	R	T	-	-	-	-	OSV11-Co4
332217	Harbourne Close, Aylesbury	49	39	60/64	45	39	43	50	42	5	3	NA	31	R	T	-	-	-	-	#
332328	Deverill Road, Aylesbury	50	41	62/66	45	39	43	51	43	6	4	A	28	R	T	-	-	-	-	OSV11-Co4
332389	Oat Close, Aylesbury	52	43	63/68	45	39	43	53	45	8	5	A	41	R	T	-	-	-	-	OSV11-Co4
332435	Anton Way, Aylesbury	48	38	58/63	45	41	43	49	43	4	2	NA	64	R	T	-	-	-	-	#
334627	Hamble Drive, Aylesbury	41	33	49/52	47	41	47	47	41	1	0	NA	146	R	T	-	-	-	-	
335983	Grenville Road, Aylesbury	37	28	47/51	47	41	47	47	41	1	0	NA	42	R	T	-	-	-	-	
336058	Grenville Road, Aylesbury	38	28	47/51	47	41	47	47	41	1	0	NA	125	R	T	-	-	-	-	
336324	Cornbrook Road, Aylesbury	46	39	53/57	47	41	47	49	42	2	1	NA	124	R	T	-	-	-	-	#
336610	Plym Close, Aylesbury	42	34	49/53	47	41	47	48	41	1	1	NA	108	R	T	-	-	-	-	
337269	Hannon Road, Aylesbury	43	35	51/55	47	41	47	48	42	1	1	NA	65	R	T	-	-	-	-	
337422	Nene Close, Aylesbury	48	40	56/61	45	46	49	49	46	4	1	A	27	R	T	-	-	-	-	#
337442	Frome Close, Aylesbury	42	33	52/55	45	46	49	47	46	2	0	NA	45	R	T	-	-	-	-	
337702	Tees Road, Aylesbury	44	36	54/57	47	41	47	48	42	2	1	NA	44	R	T	-	-	-	-	
337871	Nursery Close, Aylesbury	36	27	45/48	47	41	47	47	41	0	0	NA	21	R	T	-	-	-	-	
338807	Marsh Lane, Stoke Mandeville	62	53	79/82	55	51	54	63	55	8	4	S	1	R	T	-	-	-	NI	OSV11-Co2 OSV11-Do3
338869	Marsh Lane, Stoke Mandeville	59	50	73/76	55	51	54	60	54	6	2	A	2	R	T	-	-	-	-	OSV11-Co2
338898	Lower Road, Stoke Mandeville	52	44	65/68	50	41	48	54	45	4	4	A	14	R	T	-	-	-	-	OSV11-Co2

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		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
338936	Lower Road, Stoke Mandeville	50	41	64/67	50	41	48	50	41	0	0	A	2	R	T	-	-	-	-	
339059	Lower Road, Stoke Mandeville	58	50	68/71	54	50	54	59	53	6	3	A	1	R	T	-	-	-	-	OSV11-Co2
340267	Hughenden Green, Aylesbury	52	33	48/51	52	43	47	52	43	1	0	A	49	R	T	-	-	-	-	
340847	Bowler Road, Aylesbury	39	31	48/52	52	43	47	52	43	0	0	NA	77	R	T	-	-	-	-	
341103	Lower Road, Aylesbury	50	41	59/62	50	41	48	50	41	0	0	A	1	R	T	-	-	-	-	
341163	Lower Road, Stoke Mandeville	49	40	62/65	50	41	48	49	40	-1	-1	A	12	R	T	-	-	-	-	
341245	Mentmore Green, Aylesbury	52	33	51/54	52	43	47	52	43	0	0	A	17	R	T	-	-	-	-	
341560	Kynaston Avenue, Aylesbury	45	35	53/56	52	43	47	53	43	1	1	NA	108	R	T	-	-	-	-	
341860	Westfield, Aylesbury	51	43	59/62	52	43	47	54	46	2	3	A	2	R	T	-	-	-	-	OSV11-Co3
341948	Rake Way, Aylesbury	43	34	52/55	52	43	47	52	43	0	1	NA	127	R	T	-	-	-	-	
343499	Risborough Road, Stoke Mandeville	54	45	68/71	53	47	55	56	49	3	1	A	9	R	T	-	-	-	-	
343533	Risborough Road, Stoke Mandeville	51	42	61/65	53	47	55	51	42	-2	-5	A	9	R	T	-	-	-	-	
343650	Yew Tree Close, Stoke Mandeville	51	43	62/66	49	44	49	51	43	2	-1	A	8	R	T	-	-	-	-	
343762	Chestnut Way, Stoke Mandeville	55	46	68/71	49	44	49	55	47	6	4	A	13	R	T	-	-	-	-	OSV11-Co2
343823	Risborough Road, Stoke Mandeville	49	41	60/65	63	55	69	49	41	-13	-14	A	7	R	T	H	-	-	-	
343866	Risborough Road, Stoke Mandeville	52	43	65/68	69	61	81	67	59	-2	-2	A	6	R	T	H	-	-	-	
343943	Risborough Road, Stoke	49	40	60/63	66	59	71	62	55	-4	-3	A	5	R	T	H	-	-	-	

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		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
	Mandeville																			
343993	Chalgrove End, Stoke Mandeville	42	34	52/55	50	44	50	50	45	1	0	NA	37	R	T	-	-	-	-	
344316	Hampden Road, Stoke Mandeville	43	35	52/55	50	44	50	51	45	1	0	NA	67	R	T	-	-	-	-	
344788	Station Road, Stoke Mandeville	43	35	58/61	50	44	50	50	44	0	0	NA	16	R	T	-	-	-	-	
344841	Eskdale Road, Stoke Mandeville	44	36	54/57	50	44	50	51	45	1	0	NA	19	R	T	-	-	-	-	
345007	Eskdale Road, Stoke Mandeville	47	39	59/62	50	44	50	50	44	0	0	NA	14	R	T	-	-	-	-	
345164	Irvine Drive, Stoke Mandeville	47	39	62/65	50	44	50	51	44	1	0	NA	18	R	T	-	-	-	-	
345301	Risborough Road, Stoke Mandeville	51	43	61/64	59	50	62	51	43	-8	-8	A	10	R	T	-	-	-	-	
345404	Lower Road, Stoke Mandeville	53	44	67/70	51	42	48	55	46	4	4	A	17	R	T	-	-	-	-	OSV11-Co2
345481	Lower Road, Stoke Mandeville	57	50	65/68	61	54	71	58	51	-2	-2	A	15	R	T	-	-	-	-	
345557	Lower Road, Stoke Mandeville	51	42	68/71	53	48	65	56	49	2	1	A	1	R	T	-	-	-	-	
345593	Marsh Lane, Stoke Mandeville	53	45	68/71	55	50	65	57	51	2	1	A	1	R	T	-	-	-	-	
345617	Hampden Road, Stoke Mandeville	47	39	60/63	50	44	50	51	45	1	0	NA	35	R	T	-	-	-	-	
345752	Chapel Lane, Stoke Mandeville	52	43	61/65	49	44	49	53	46	4	2	A	18	R	T	-	-	-	-	OSV11-Co2
345824	Lower Road, Stoke Mandeville	52	43	66/69	51	42	48	54	45	3	3	A	7	R	T	-	-	-	-	OSV11-Co2
348206	Keen Close, Aylesbury	39	30	49/52	47	42	48	48	42	1	0	NA	75	R	T	-	-	-	-	

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		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
348419	Prestwold Way, Aylesbury	48	40	58/63	56	46	51	56	46	0	0	A	113	R	T	-	-	-	-	
348501	Andrews Way, Aylesbury	49	42	58/62	56	46	51	56	46	0	0	A	18	R	T	-	-	-	-	
348799	Jakeman Way, Aylesbury	41	33	50/53	47	41	47	48	41	1	0	NA	36	R	T	-	-	-	-	
348914	Briskman Way, Aylesbury	40	31	48/52	47	41	47	47	41	1	0	NA	88	R	T	-	-	-	-	
349825	Briskman Way, Aylesbury	42	34	50/53	47	41	47	48	41	1	0	NA	58	R	T	-	-	-	-	
358148	Wendover Road, Weston Turville	46	37	59/62	54	47	52	54	48	1	0	NA	18	R	T	-	-	-	-	
358721	Aylesbury Road, Wendover	40	32	51/54	73	66	75	73	66	0	0	NA	7	R	T	H	-	-	-	
700333	Old Risborough Road, Stoke Mandeville	62	53	77/83	49	44	52	62	53	13	9	S	2	R	T	-	-	-	NI	OSV11-Co1 OSV11-Do1
700334	Whitethorn Close, Stoke Mandeville	61	52	75/78	49	44	52	61	52	12	9	A	4	R	T	-	-	-	-	OSV11-Co1
700338	Upper Hartwell, Stone	51	42	61/64	54	50	54	55	51	2	1	A	1	R	T	-	-	-	-	
700339	Upper Hartwell, Stone I	51	43	62/65	54	53	51	56	53	2	0	A	G5	R	T	-	-	-	-	
810002	Old Risborough Road Rear Facades 1	60	52	70/75	49	44	52	60	52	12	9	A	7	R	T	-	-	-	-	OSV11-Co1
810003	Old Risborough Road Rear Facades 2	60	51	72/76	49	44	52	60	52	11	8	A	6	R	T	-	-	-	-	OSV11-Co1
901006	Haddenham House and Golf Course - Thames Valley Walk	56	47	69/74	44	39	45	57	48	13	9	-	-	LD	-	-	-	-	-	
901007	Haddenham House and Golf Course - Round Aylesbury Walk	51	41	62/66	44	39	45	51	43	8	5	-	-	LD	-	-	-	-	-	
901008	Haddenham House and Golf Course - Hartwell House	58	49	74/77	46	36	43	58	49	13	13	-	-	LD	-	-	-	-	-	



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		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
	Garden 1																			
901009	Haddenham House and Golf Course - Hartwell House Garden 2	51	42	63/68	43	37	46	52	43	8	6	-	-	LD	-	-	-	-	-	
901010	Haddenham House and Golf Course - Hartwell House Garden 3	46	37	59/64	57	48	59	57	48	0	0	-	-	LD	-	-	-	-	-	
901011	Haddenham House and Golf Course - Aylesbury Park Golf Club 1	57	48	72/77	43	37	46	58	48	14	12	-	-	LD	-	-	-	-	-	
901012	Haddenham House and Golf Course - Aylesbury Park Golf Club 2	52	43	66/71	46	36	43	53	44	7	7	-	-	LD	-	-	-	-	-	
901013	Haddenham Vale 3	73	63	89/92	45	46	49	73	63	28	18	-	-	LD	-	-	-	-	-	
901014	Haddenham Vale 2	37	28	47/51	45	41	43	46	41	1	0	-	-	LD	-	-	-	-	-	
901015	Haddenham Vale 1	56	46	68/72	45	41	43	56	47	11	7	-	-	LD	-	-	-	-	-	
901016	Haddenham Vale 4	51	42	63/66	41	30	31	51	42	10	12	-	-	LD	-	L	-	-	-	
298735	Brightstart Nursery, Hampden Square, Aylesbury, (Pre School Education)	43	35	55/59	47	42	48	48	42	1	1	B	1	G4	T	-	-	-	-	
299219	Trenchard Street, Aylesbury, (General Commercial)	41	32	53/56	49	46	50	50	46	1	0	B	1	G5	T	-	-	-	-	
299219	Trenchard Street, Aylesbury, (General Commercial)	41	32	53/56	49	46	50	50	46	1	0	B	1	G5	T	-	-	-	-	
305139	Meadoway, Hartwell, (General	50	42	57/60	54	45	69	54	45	0	0	B	1	G5	T	-	-	-	-	

Assessment Location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
	Commercial)																			
305983	Church of the Assumption, Hartwell (Church)	49	40	59/64	45	37	44	49	40	4	3	B	1	G3	T	-	-	-	-	\$
306049	Hartwell House Hotel, Oxford Road, Lower Hartwell, (Hotel)	50	41	62/67	45	37	44	50	41	5	4	B	1	G4	T	-	-	-	-	^
306055	Bugle Horn Hotel, Oxford Road, Lower Hartwell, (Hotel)	44	36	55/58	63	55	69	63	55	0	0	B	1	G4	T	-	-	-	-	
308722	Rabans Lane, Aylesbury, (General Commercial)	43	34	56/59	49	46	50	50	46	1	0	B	1	G5	T	-	-	-	-	
309021	Phoenix House, Smeaton Close, Aylesbury, (General Commercial)	39	30	51/54	49	46	50	50	46	0	0	B	1	G5	T	-	-	-	-	
309021	Smeaton Close, Aylesbury, (General Commercial)	39	30	51/54	49	46	50	50	46	0	0	B	1	G5	T	-	-	-	-	
309021	Anglo Business Park, Smeaton Close, Aylesbury, (Engineering Works)	39	30	51/54	49	46	50	50	46	0	0	B	28	G5	T	-	-	-	-	
309021	Bell Business Park, Smeaton Close, Aylesbury, (General Commercial)	39	30	51/54	49	46	50	50	46	0	0	B	11	G5	T	-	-	-	-	
309118	Brunel Road, Rabans Lane Industrial Area, (Factory)	44	35	58/61	47	42	48	49	43	2	1	B	1	G5	T	-	-	-	-	
309118	Telford Close, Aylesbury, (General Commercial)	44	35	58/61	47	42	48	49	43	2	1	B	1	G5	T	-	-	-	-	
309118	Enterprise House, Telford	44	35	58/61	47	42	48	49	43	2	1	B	1	G5	T	-	-	-	-	

Assessment Location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
	Close, Aylesbury, (General Commercial)																			
309118	Rabans Lane, Rabans Lane Industrial Area, (General Commercial)	44	35	58/61	47	42	48	49	43	2	1	B	1	G5	T	-	-	-	-	
309118	Rabans Lane, Rabans Lane Industrial Area, (General Commercial)	44	35	58/61	47	42	48	49	43	2	1	B	1	G5	T	-	-	-	-	
309118	Brunel Gate, Telford Close, Aylesbury, (General Commercial)	44	35	58/61	47	42	48	49	43	2	1	B	10	G5	T	-	-	-	-	
309118	Rabans Lane, Rabans Lane Industrial Area, (General Commercial)	44	35	58/61	47	42	48	49	43	2	1	B	3	G5	T	-	-	-	-	
309118	Rabans Lane, Rabans Lane Industrial Area, (Shopping)	44	35	58/61	47	42	48	49	43	2	1	B	1	G5	T	-	-	-	-	
309118	Telford Close, Aylesbury, (General Commercial)	44	35	58/61	47	42	48	49	43	2	1	B	1	G5	T	-	-	-	-	
309275	Edison Road, Rabans Lane Industrial Area, (General Commercial)	50	41	64/67	47	36	41	52	42	5	6	B	10	G5	T	-	-	-	-	\$
309296	Edison Road, Rabans Lane Industrial Area, (Office)	52	43	66/69	47	36	41	53	43	6	8	B	1	G5	T	-	-	-	-	\$
309320	Woodley House, Rabans Close, Rabans Lane Industrial Area, (Office)	47	38	61/64	47	36	41	50	40	3	4	B	1	G5	T	-	-	-	-	\$

Assessment Location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
309320	Edison Road, Rabans Lane Industrial Area, (Office)	47	38	61/64	47	36	41	50	40	3	4	B	12	G5	T	-	-	-	-	\$
309320	Rabans Close, Rabans Lane Industrial Area, (Office)	47	38	61/64	47	36	41	50	40	3	4	B	24	G5	T	-	-	-	-	\$
309415	Bessemer Crescent, Rabans Lane Industrial Area, (Shopping)	50	40	64/67	47	36	41	52	42	4	6	B	8	G5	T	-	-	-	-	\$
309415	Edison Road, Rabans Lane Industrial Area, (Office)	50	40	64/67	47	36	41	52	42	4	6	B	20	G5	T	-	-	-	-	\$
309415	Edison Road, Rabans Lane Industrial Area, (Restaurant)	50	40	64/67	47	36	41	52	42	4	6	B	1	G5	T	-	-	-	-	\$
309474	Haydon Mill, Rabans Lane, Aylesbury, (General Commercial)	49	39	64/67	50	46	51	52	47	3	1	B	1	G5	T	-	-	-	-	\$
310817	St. Mary's Church, Fleet Marston (Church)	47	37	59/63	55	48	70	56	49	1	0	B	1	G3	T	-	-	-	-	
310891	Hunters Farm Industrial Estate, Fleet Marston, (Shopping)	50	41	67/70	65	59	70	66	59	0	0	B	18	G5	T	H	-	-	-	
312566	Ayres Yard, Marsh Lane, Bishopstone, (Engineering Works)	50	42	61/64	54	53	51	55	53	1	0	B	1	G5	T	-	-	-	-	
314803	Triangle Business Park, Quilters Way, Stoke Mandeville, (Office)	52	43	64/67	54	47	52	56	49	2	1	B	19	G5	T	-	-	-	-	
316101	Eastgate Dental Practice, Eastgate House, Wedgewood	41	33	52/55	47	42	48	48	42	1	0	B	4	G4	T	-	-	-	-	

Assessment Location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
	Street, Aylesbury, (Dental Surgery)																			
316101	Hampden Square, Aylesbury, (General Commercial)	41	33	52/55	47	42	48	48	42	1	0	B	1	G5	T	-	-	-	-	
316101	Hampden Square, Aylesbury, (General Commercial)	41	33	52/55	47	42	48	48	42	1	0	B	1	G5	T	-	-	-	-	
316101	Hampden Square, Aylesbury, (General Commercial)	41	33	52/55	47	42	48	48	42	1	0	B	1	G5	T	-	-	-	-	
316101	Hampden Square, Aylesbury, (General Commercial)	41	33	52/55	47	42	48	48	42	1	0	B	1	G5	T	-	-	-	-	
316101	Eastgate House, Wedgewood Street, Aylesbury, (General Commercial)	41	33	52/55	47	42	48	48	42	1	0	B	5	G5	T	-	-	-	-	
316101	Pine Street, Aylesbury, (Restaurant)	41	33	52/55	47	42	48	48	42	1	0	B	1	G5	T	-	-	-	-	
316101	Riverside House, Wedgewood Street, Aylesbury, (Office)	41	33	52/55	47	42	48	48	42	1	0	B	5	G5	T	-	-	-	-	
316101	Community Centre, Wedgewood Street, Aylesbury, (Community Centre)	41	33	52/55	47	42	48	48	42	1	0	B	1	G3	T	-	-	-	-	
316101	Fairford Leys Church (Church)	41	33	52/55	47	42	48	48	42	1	0	B	1	G3	T	-	-	-	-	
317201	Station Road, Stoke Mandeville, (Office)	49	41	61/64	50	44	50	50	44	0	0	B	1	G5	T	-	-	-	-	
317279	Booker Park School, Stoke Leys Close, Aylesbury, (School)	52	45	59/62	52	43	47	55	46	3	3	B	1	G4	T	-	-	-	-	OSV11-No1

Assessment Location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
317279	Lower Road, Aylesbury, (British Legion Club)	52	45	59/62	52	43	47	55	46	3	3	B	1	G5	T	-	-	-	-	\$
319187	Sedrup Farmhouse, Sedrup, Hartwell, (General Commercial)	52	44	69/72	47	40	51	53	45	6	5	B	1	G5	T	-	-	-	-	\$
319305	Church of Jesus Christ of Latter Day Saints, Aylesbury (Church)	44	36	51/54	57	48	59	57	48	0	0	B	1	G3	T	-	-	-	-	
319305	Hartwell Day Centre, Thame Road South, Aylesbury, (Day Care)	44	36	51/54	57	48	59	57	48	0	0	B	1	G4	T	-	-	-	-	
320715	Iris Close, Aylesbury, (General Commercial)	50	42	54/58	49	44	52	50	45	2	1	B	1	G5	T	-	-	-	-	\$
325816	Ashley Court, Kingsgate, Aylesbury, (Surgery)	42	34	52/55	47	42	48	48	42	1	0	B	2	G4	T	-	-	-	-	
328417	Ellen Road, Aylesbury, (General Commercial)	41	32	50/53	45	41	43	46	41	1	0	B	1	G5	T	-	-	-	-	
328417	Ellen Road, Aylesbury, (School)	41	32	50/53	45	41	43	46	41	1	0	B	1	G4	T	-	-	-	-	
330063	Ashbourne End, Aylesbury, (Kingdom Hall)	43	34	53/56	47	41	47	48	42	1	1	B	1	G3	T	-	-	-	-	
330937	Hawkslade Community Centre, Barley Crescent, Aylesbury, (Office)	45	36	55/58	48	39	48	50	41	2	2	B	1	G5	T	-	-	-	-	
337269	Walton Court Centre, Hannon Road, Aylesbury, (Shopping)	43	35	51/55	47	41	47	48	42	1	1	B	1	G5	T	-	-	-	-	

Assessment Location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
337269	Walton Court Centre, Hannon Road, Aylesbury, (General Commercial)	43	35	51/55	47	41	47	48	42	1	1	B	1	G5	T	-	-	-	-	
337269	Walton Court Centre, Hannon Road, Aylesbury, (British Legion Club)	43	35	51/55	47	41	47	48	42	1	1	B	1	G5	T	-	-	-	-	
337269	Hannon Road, Aylesbury, (Surgery)	43	35	51/55	47	41	47	48	42	1	1	B	2	G4	T	-	-	-	-	
337269	Walton Court Centre, Hannon Road (Post Office)	43	35	51/55	47	41	47	48	42	1	1	B	2	G5	T	-	-	-	-	
337269	Cole Road, Aylesbury, (School)	43	35	51/55	47	41	47	48	42	1	1	B	1	G4	T	-	-	-	-	
341163	The Belmore Centre, Lower Road (General Commercial)	49	40	62/65	50	41	48	49	40	-1	-1	B	2	G5	T	-	-	-	-	
341560	Winterton Drive, Aylesbury, (Family Service)	45	35	53/56	52	43	47	53	43	1	1	B	1	G4	T	-	-	-	-	
343650	Risborough Road, Stoke Mandeville, (General Commercial)	51	43	62/66	49	44	49	51	43	2	-1	B	1	G5	T	-	-	-	-	\$
344788	Station Road, Stoke Mandeville, (Post Office)	43	35	58/61	50	44	50	50	44	0	0	B	1	G5	T	-	-	-	-	
345007	Community Centre, Eskdale Road (Community Centre)	47	39	59/62	50	44	50	50	44	0	0	B	1	G3	T	-	-	-	-	
345164	Stoke Mandeville Methodist Church (Church)	47	39	62/65	50	44	50	51	44	1	0	B	1	G3	T	-	-	-	-	
345404	Manor Farm, Lower Road,	53	44	67/70	51	42	48	55	46	4	4	B	3	G5	T	-	-	-	-	\$

Assessment Location		Impact criteria										Significance criteria								Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
	Stoke Mandeville, (Office)																			
345404	Weston Way Industrial Estate, Lower Road (Office)	53	44	67/70	51	42	48	55	46	4	4	B	7	G5	T	-	-	-	-	\$
345540	St. Mary's Church, Lower Road (Church)	61	53	65/68	66	59	71	62	56	-4	-3	B	1	G3	T	H	-	-	-	
345557	Stoke Mandeville Combined School (School)	51	42	68/71	53	48	65	56	49	2	1	B	1	G4	T	-	-	-	-	
348206	Keen Close, Aylesbury (School)	39	30	49/52	47	42	48	48	42	1	0	B	1	G4	T	-	-	-	-	
348914	Lavric Road, Aylesbury, (General Commercial)	40	31	48/52	47	41	47	47	41	1	0	B	1	G5	T	-	-	-	-	
711018	Bucks Goat Centre, Old Risborough Road – North façade (General Commercial)	60	51	69/73	58	49	53	60	51	2	1	B	1	G5	T	-	-	-	-	
810001	Bucks Goat Centre, Old Risborough Road – South façade (General Commercial)	60	52	66/69	49	44	52	60	52	11	9	B	1	G5	T	-	-	-	-	^



### Direct impact - Summary

4.3.7 The operational airborne noise impacts identified in Table 3 are summarised in Table 4.

Table 4: Summary of operational airborne sound impacts

Receptor	Number of impacts		
	Minor	Moderate	Major
Residential properties	124	141	23
Non-residential properties	1	1	1
Quiet areas	None	None	None

## 4.4 Assessment of impacts and effects

### Residential receptors: direct effects - individual buildings

- 4.4.1 Taking account of the avoidance and mitigation measures incorporated into the Proposed Scheme, the assessment has identified a residential building, closest to the Proposed Scheme at Mill House Farm, Risborough Road receptor reference 313673 (marked as OSV11-Do2 in Table 3) where noise would exceed the daytime trigger threshold set in the Regulations. It is therefore estimated that this building is likely to qualify for noise insulation under the Regulations. These buildings are indicated on Map Series SV-02 (Volume 5, Sound, Noise and Vibration Map Book).
- 4.4.2 The assessment has identified three additional residential buildings close to the Proposed Scheme where the daytime forecast noise level does not exceed the threshold set in the Regulations but the forecast night-time noise level would exceed the World Health Organization's Interim Target of 55dB<sup>2</sup>, or the maximum noise level (dependent on the number of train passes) as a train passes exceeds the criterion<sup>3</sup>. It is estimated that these buildings will also be offered noise insulation as described in the Avoidance and mitigation measures section of Volume 2: Report 11. These buildings are shown on Map series SV-02 (Volume 5, Sound, Noise and Vibration Map Book):
- Putlowes Drive, Fleet Marston, receptor reference 311007 (marked as OSV11-Do4 in Table 3);
  - Whitethorn Farm and 5 Whitethorn Close, Risborough Road, Stoke Mandeville receptor reference 700333 (marked as OSV11-Do1 in Table 3); and
  - Old Moat Farmhouse, Marsh Lane, Stoke Mandeville receptor reference 338807 (marked as OSV11-Do3 in Table 3).
- 4.4.3 The mitigation measures including noise insulation will reduce noise inside all dwellings such that it will not reach a level where it would significantly affect residents.

<sup>2</sup> Equivalent continuous level, L<sub>pAeq</sub>, 23:00-07:00 measured without reflection from the front of buildings.

<sup>3</sup> During the night (2300-0700) a significant effect is also identified where the Proposed Scheme results in a maximum sound level at the façade of a building at or above: 85 dB L<sub>pAFmax</sub> (where the number of train pass-bys exceeding this value is less than or equal to 20); or 80 dB L<sub>pAFmax</sub> (where the number of train pass-bys exceeding this value is greater than 20).

## Residential receptors: direct effects –communities

- 4.4.4 The avoidance and mitigation measures in this area will avoid airborne noise adverse effects on the majority of receptors, and at the following communities:
- Stoke Mandeville (except as noted in Table 5);
  - Aylesbury (except as noted in Table 5);
  - Bishopstone;
  - Stone;
  - Sedrup (except as noted in Table 5); and
  - Lower Hartwell.
- 4.4.5 Taking account of the envisaged mitigation, Map Series SV-02 (Volume 5, Sound, Noise and Vibration Map book) shows the long term 40dB<sup>4</sup> night-time sound level contour from the operation of trains on the Proposed Scheme. The extent of the 40dB night-time sound level contour is equivalent to, or slightly larger than, the 50dB daytime contour<sup>5</sup>. In general, below these levels adverse effects are not expected.
- 4.4.6 Above 40dB during the night and 50dB during the day the effect of noise is dependent on the baseline sound levels in that area and the change in sound level (magnitude of effect) brought about by the Proposed Scheme. The airborne noise impacts and effects forecast for the operation of the scheme are presented on Map Series SV-02 (Volume 5 Map Book).
- 4.4.7 The changes in noise levels are likely to affect the acoustic character of the area such that there is a perceived change in the quality of life and are considered to be significant when assessed on a community basis<sup>6</sup> taking account of the local context.
- 4.4.8 The Proposed Scheme only sound level is the addition of the rail and road sound associated with the Proposed Scheme. At Hartwell this level consists of railway sound from the HS2 alignment and road traffic sound from the realigned A418. The new railway sound levels are less than the thresholds of 50 dB  $L_{pAeq,0700-2300}$  and 40 dB  $L_{pAeq,2300-0700}$  which represent the onset of the lowest observed community noise effects during the day and night, as defined in Appendix SV-001-000. Furthermore, the A418 is moving away from Hartwell, and a reduction in road traffic sound levels is predicted by the Proposed Scheme. Whilst the addition of the sound associated with this new infrastructure is at or above the screening level, as the contribution from a new transportation source is less than the screening level and dominant road traffic source is being reduced, the effect on this community is not considered to be significant.

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<sup>4</sup> Defined as the equivalent continuous sound level from 23:00 to 07:00 or  $L_{pAeq,night}$

<sup>5</sup> With the train flows described in the assumptions section of this CFA Report, the daytime sound level (defined as the equivalent continuous sound level from 07:00 to 23:00 or  $L_{pAeq,day}$  from the Proposed Scheme would be approximately 10dB higher than the night-time sound level. The 40dB contour therefore indicates the distance from the Proposed Scheme at which the daytime sound level would be 50dB.

<sup>6</sup> Further information is contained in Volume 1.

4.4.9 Approximately 20 isolated properties within the area have been identified as being subject to an observed adverse noise effect; these effects are likely to be considered as an effect on the acoustic character of the area such that there is a perceived change in the quality of life. However, as the affected properties are spatially remote from larger defined residential areas, are subject to smaller magnitudes of noise effect, or are small in number, the effects are not considered to be significant.

4.4.10 In this area, the direct adverse effects<sup>7</sup> on the areas of the residential communities identified in Table 5 are considered to be significant.

Table 5: Direct adverse effects on residential communities and shared open areas that are considered significant on a community basis

Significant effect number (see Map series SV-02, Table 1 and 3)	Source of significant effect	Time of day	Location and details
OSV11-Co1	Airborne noise increase from new train services and the road traffic on Stoke Mandeville Bypass.	Daytime and night-time	Southern edge of Stoke Mandeville. Approximately 30 dwellings along the Risborough Road in the vicinity of Old Risborough Road and Whitethorn Close including shared open areas. Forecast increases in sound from the railway are likely to cause a major adverse effect on the acoustic character of the area around the closest properties, reducing with distance away from the Proposed Scheme. The effect on the acoustic character of residential areas that are located further from the railway would be a minor effect.
OSV11-Co2	Airborne noise increase from new train services	Daytime and night-time	Western edge of Stoke Mandeville. Approximately 70 dwellings in the vicinity of Marsh lane, Lower Road, Yew Tree Close, Chestnut Way and Chapel Lane including shared open areas. Forecast increases in sound from the railway are likely to cause minor adverse effects on the acoustic character of the area around the closest properties, with moderate effects at properties on Chestnut Way.
OSV11-Co3	Airborne noise increase from new train services, road traffic on Stoke Mandeville Bypass and train services on the realigned Princes Risborough to Aylesbury line	Daytime and night-time	South western edge of Aylesbury. Approximately 25 dwellings in the vicinity of Westfield and Batt Furlong including the shared open area by Westfield. Forecast increases in sound from the new railway, new road by-pass and the realigned railway are likely to cause a minor adverse effect on the acoustic character of the area around the closest properties.
OSV11-Co4	Airborne noise increase from new train services	Daytime and night-time	South western edge of Aylesbury. Approximately 130 dwellings in the vicinity of Isis Close, Deverill Road, Oat Close and the corner of Anton Way including shared open areas behind Isis and Oat Close. Forecast increases in sound from the railway are likely to cause a moderate adverse effect on the acoustic character of the area around the closest properties, reducing with distance away from the Proposed Scheme. The effect on the acoustic character of residential areas on the corner of Anton Way that are located further from the railway would be a minor effect.

<sup>7</sup> Information is provided in the emerging National Planning Practice Guidance – Noise <http://planningguidance.planningportal.gov.uk>

Significant effect number (see Map series SV-02, Table 1 and 3)	Source of significant effect	Time of day	Location and details
OSV11-Co5	Airborne noise increase from new train services	Daytime and night-time	Sedrup. Approximately 10 dwellings in the vicinity of Sedrup Lane. Forecast increases in sound from the railway are likely to cause a moderate adverse effect on the acoustic character of the area around the closest properties, reducing with distance away from the Proposed Scheme.

### Residential receptors: indirect effects

- 4.4.11 Changes in road traffic due to the Proposed Scheme are likely to cause beneficial noise effects on residential receptors along the A4010 Risborough Road, benefiting dwellings facing the road from just south of the junction with Chapel Lane to the junction with Lower Road, represented by receptor references 343823, 343943 and 345301.
- 4.4.12 The changes in noise levels in this local area resulting from the reduction in road traffic are likely to benefit the acoustic character of the area such that there is a perceived improvement in the quality of life. These effects are considered significant when assessed on a community basis taking account of the local context.

### Non-residential receptors: direct effects

- 4.4.13 The assessment has identified airborne noise impacts at Booker Park School, Hartwell House Hotel and Buck Goat Centre, represented by receptor references 317279, 306049 and 176071.

#### *Booker Park School*

- 4.4.14 A minor operational noise impact has been identified based upon the change in the airborne noise level outside this receptor, reference 317279. An assessment has been undertaken to determine if this impact would result in a likely significant effect at this non-residential receptor, using the significance criteria detailed in Volume 5: Appendix 001-000.
- 4.4.15 This School is identified, on a precautionary basis, as being subject to a significant adverse effect denoted by OSV11-No1 in Table 3 and drawing SV-02 (see CFA22 Volume 5 sound, noise and vibration map book). This may take the form of the activity disturbance to the pupil within the school.

#### *Hartwell House Hotel*

- 4.4.16 A moderate operational noise impact has been identified based upon the change in the airborne noise level outside this receptor, reference 306049. An assessment has been undertaken to determine if this impact would result in a likely significant effect at this non-residential receptor, using the significance criteria detailed in Volume 5: Appendix 001-000.

- 4.4.17 Hartwell House is a country house constructed in the early 17th Century. The walls are constructed from Ashlar stone and the roof is slate. The fenestration is single glazed sash windows.
- 4.4.18 The screening level for this type of building is exceeded during the daytime only, and only as a result of the combination of the railway sound from HS2 and road traffic sound from the realigned A418. The new railway sound levels are less than the screening threshold of 50 dB  $L_{pAeq,0700-2300}$ . Furthermore, the A418 is moving away from Hartwell, and a reduction in road traffic sound levels is predicted by the Proposed Scheme. Whilst the addition of the sound associated with this new infrastructure is at the screening level, as the contribution from a new transportation source is less than the screening level and dominant road traffic source is being reduced, the effect on this receptor is not considered to be significant.

### *Bucks Goat Centre*

- 4.4.19 A major operational noise impact has been identified based upon the change in the airborne noise level incident at this receptor, reference 176071. An assessment has been undertaken to determine if this impact would result in a likely significant effect at this non-residential receptor, using the significance criteria detailed in Volume 5: Appendix 001-000.
- 4.4.20 Much of the function of the building is current undertaken outside or in buildings which have low acoustic performance, and not considered to be sensitive to noise. The incident level is less than the ecology criteria for potential significant effects on animals defined in Appendix SV-001-000, and therefore, the impact at this non-residential receptor is not considered to be significant.

### *Summary*

- 4.4.21 The assessment of operational noise and vibration indicates that significant effects are likely on the non-residential receptor identified in Table 6.
- 4.4.22 The assessment of effects on non-residential receptors has been undertaken on a reasonable worst case basis.

Table 6: Likely significant noise or vibration effects on non-residential receptors arising from operation of the Proposed Scheme

Significant effect number (see Map series SV-02, Table 1 and 3)	Type of significant effect and source	Time of day	Location and details
OSV11-No1	Minor adverse effect on school activities <sup>8</sup> due to increased sound levels from the operation of the new railway, the realigned Princes Risborough to Aylesbury Line and traffic on the Stoke Mandeville by-pass.	Daytime	Booker Park School, Stoke Leys Close

<sup>8</sup> Potential risk of disturbance of teaching activities outdoors, and indoors when windows are wide open.

## Non-residential receptors: indirect effects

- 4.4.23 The assessment of operational noise and vibration indicates that significant effects are likely on the non-residential receptor identified in Table 7.
- 4.4.24 The assessment of effects on non-residential receptors has been undertaken on a reasonable worst case basis.

Table 7: Likely significant noise or vibration indirect effects on non-residential receptors arising from operation of the Proposed Scheme

Significant effect number (see Map series SV-02, Table 1 and 3)	Type of significant effect and source	Time of day	Location and details
OSV11-No2	Likely minor beneficial effect on the acoustic character of the area around the church due to a permanent reduction in road traffic caused by the Proposed Scheme.	Daytime	Church of St Mary the Virgin, at the at the junction of Lower Road and Risborough Road

## Cumulative effects

- 4.4.25 Details of properties being currently developed which were afforded planning approval before the safeguarding date are presented in Volume 5: Appendix CToo4-000. Within this area, the operational sound, noise or vibration associated with these developments in conjunction with the operation of the Proposed Scheme do not result in any significant cumulative effects.